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## LEGAL REGULATION OF RADIATION SAFETY AND RELATED METHODOLOGICAL ISSUES

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**Abstract:** The international and national legal regulations on radiation safety acts were analyzed. The necessity of national legal harmonization of radiation safety to international regulations is recommended.

**Keywords:** radiation safety, laws, international and national regulations acts

Due to the geographical position and radiation safety of the Republic of Azerbaijan, international cooperation in this area is necessary. This is important both in terms of radiation safety in the country and in terms of trans boundary pollution. Effective cooperation in the field of Radiation and Nuclear Safety is very important for international standards to prevent the use of Armenian Nuclear Power Wastes (dirty bombs) for military purposes, the transfer of nuclear materials and dual-use materials from Azerbaijan territory.

Azerbaijan, has been a member of the International Atomic Energy Agency since 2001 and joint to international conventions, such as AEBA Charter, On the fight against nuclear terrorism International Convention, Nuclear Non-Proliferation Treaty, Protocols relating to conventions,

Despite the adoption of the Law on Environmental Impact Assessment in the Republic of Azerbaijan in 2018, there are no rules and standards and methodologies for risk assessment that could be taken into account during environmental impact assessment.

A number of projects implemented in Azerbaijan (Radioactive Waste Cleaning, Sterilization Center using Radioactive Isotopes, and Placement of High-Performance Cobalt Isotopes on the Experimental Database of the Institute for Radiation Problems to assess the environmental impact of these operations when applying ionizing radiation sources has become a problem.

A number of resolutions in national legislation (“Rules of monitoring of environmental and natural resources.” Procedure (Decision of Cabinet of Ministers on 1 July 2004), “On the Increase of Radiation Safety Control in AR Territory” Decision of the Cabinet of Ministries on July 11, 1997, “On the implementation of disposal of radioactive and ionizing radiation wastes by the relevant executive body” Presidential degree December 30, 2016, it is important to develop guidelines and regulations based on the study of international experience.

**Legal bases of radiation safety** include international IAEA Safety standards. Fundamental safety principles-2006 [1, 2], IAEA Safety standards. Radiation protection and safety of radiation sources: International basic safety standard-2014 [3, 4], IAEA Safety standards. Prospective Radiological environmental impact assessment for facilities and activities-2018 [5, 6], on National legal bases and National aspects: AR law on Radiation safety

of population.-1997 [8], AR law on Environmental protection – 1999 [7], AR law on Ecological safety – 1999 [7], General safety requirements include, Governmental, legal and regulatory framework for safety, Leadership and management for safety, Radiation protection and safety of radiation sources, Safety assessment for facilities and activities, Predisposal management of radioactive waste, Decommissioning and termination of activities, Emergency response

**Specific safety requirements include:** Site Evaluation for Nuclear Installation, Safety of Nuclear Power plants, design, commissioning and operation, Safety of research reactors, Safety of Nuclear Fuel Cycle Facilities, Safety of Radioactive Waste Disposal Facilities, Safe Transport of Radioactive Material

**Radiation safety Principles include:** Responsibility for safety, Role of government, Leadership and management for safety, Justification of facilities and activities, Optimization of protection, Limitation of risks to individuals, Protection of present and future generation, Prevention of accidents, Emergency preparedness and response, Protective actions to reduce existing or unregulated radiation risks

**National level:** Normalization, Justification, Optimization

**An overview of the factors required to evaluate the environmental impact of radiological activities**

**Factor-Characteristics of the facility or activity:**

- Source term
- Expected doses from normal operation or projected doses from potential exposure
- Safety characteristics of the activity or facility
- Radionuclides
- Quantity (both activity and mass/volume)
- Form( chemical/ physical make-up)
- Geometry( size, shape, height of release)
- Potential for release): the source term differs significantly for normal operation and accidents
- Preliminary assessments or previous assessments for similar facilities
- Types of safety barriers and engineering features present in the design
- Potential for severe accidents

**Environmental Impact Assessment**

**Factor-Characteristics of the location:**

- 1.Characteristics of the facility site relating to a dispersion of radionuclides in the environment( e.g. geology, hydrology, meteorology, morphology, biophysical characteristics)
- 2.Presence and characteristics of receptors (e.g. demography, living habits and conditions, flora and fauna)
- 3.Exposure pathways
- 4.Land use and other activities (e.g. agriculture, food processing, other industries)
- 5.Characteristics of other installations in the vicinity and possible natural and human induced external events (e.g. earthquakes, flooding, industrial accidents, transport accidents)

National regulation acts on radiation safety:

“Rules of monitoring procedures of environmental and national resources.” Procedure (Decision of Cabinet of ministries on 1 July 2004)

“On the strengthening of control of radiation safety in AR territory” Decision of Cabinet of Ministries on 11 July 1997

On the implementation of disposal of radioactive and ionizing radiation wastes by the relevant executive body, Presidential degree, December 30, 2016

## **Radiological Environmental Impact Assessment**

### **IAEA Safety Standards:**

1. Prospective Radiological Environmental Impact Assessment for Facilities and Activities – 2018
2. AR Law on Environmental Impact Assessment, 2018
3. Annex to “AR Law on Environmental Impact Assessment”, 2018 – List of required activities for Environmental Impact Assessment, - Design of nuclear power plants and related objects with nuclear reactors.

**Environmental requirements when working with radioactive substances** SanPiN 2.6.1.2800-10 "Radiation Safety Requirements for Radiation of the Population by Natural Ionizing Radiation Sources", adopted in 2010. It covers issues related to regulatory, industrial, or household sources of natural radiation that can be used and regulated. These include radiation due to the presence of radon isotopes and radioactive decomposition products in the premises, radiation from the building materials and products, and radiation from natural radionuclides in drinking water.

### **National Rules for Radiation safety assessment**

#### **Radiation safety assessment is based on:**

- Nature and extent of radioactive contamination of the environment;
- Analysis of observance of norms, rules and hygienic measures to ensure radiation safety;
- Radiation accident probability and its scale;
- Prevention of radiation accidents and preparation for liquidation of their consequences;
- Analysis of radiation doses exposed to separate groups of the population from ionizing radiation sources;
- Number of persons exposed to an overdose of radiation dose.

#### **National requirements to radiation safety**

- Assessment of radiation safety conditions
- Radiation safety requirements when working with ionizing radiation sources
- Ensuring public safety from the effects of natural radionuclides
- Radiation Safety Requirements for Food Production and Use
- Ensuring radiation safety of the population during medical X-ray and radiological procedures
- Record and control of individual radiation doses

#### **Recommendation**

The IAEA Safety Standards, “Prospective Radiological Environmental Impact Assessment for Facilities and Activities” prepared by the IAEA in 2018 recommended to include in the Law of the Republic of Azerbaijan on Environmental Impact Assessment. Analysis of the adoption aspects of radiation safety and the development of appropriate adjustments to the current environmental situation in the Republic.

### **References**

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7. Law of the Azerbaijan Republic of June 8, 1999. No. 678-IQ About environmental protection 26.11.2020
8. Law of the Azerbaijan Republic of December 30, 1997 No. 423-IG. About radiation safety of the population. 17.05.2019

## **ПРАВОВОЕ РЕГУЛИРОВАНИЕ РАДИАЦИОННОЙ БЕЗОПАСНОСТИ И СООТВЕТСТВУЮЩИЕ МЕТОДОЛОГИЧЕСКИЕ ВОПРОСЫ**

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**Резюме:** Проанализировано международное и национальное правовое регулирование актов радиационной безопасности. Рекомендуется необходимость гармонизации национального законодательства в области радиационной безопасности с международными нормами.

**Ключевые слова:** радиационная безопасность, законы, международные и национальные нормативные акты.

## **RADIASIYA TƏHLÜKƏSİZLİYİNİN HÜQUQİ TƏNZİMLƏNMƏSİ VƏ ONA UYĞUN METODOLOJİ MƏSƏLƏLƏR**

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**Xülasə:** Radiasiya təhlükəsizliyi aktlarına dair beynəlxalq və milli hüquqi normativlər təhlil edilmişdir. Radiasiya təhlükəsizliyi sahəsində milli qanunvericiliyin beynəlxalq standartlara uyğunlaşdırılmasının zəruriliyi tövsiyə olunur.

**Açar sözlər:** radiasiya təhlükəsizliyi, qanunlar, beynəlxalq və milli qaydalar aktı